【CLAIMS】

【Claim 1】

A drum type washing machine comprising:

a tub;

a drum installed in the tub to rotate about a horizontal axis;

a driving motor rotating the drum;

a key input unit receiving a washing instruction from a user;

a memory storing a reference value for an eccentricity of the drum;

a microcomputer controlling washing and rinsing operations in accordance with a procedure set by the user upon an input of a start command through the key input unit and preventing repetition of a preliminary spin drying operation using a measured eccentricity of the drum; and

a driving control unit controlling velocity of the driving motor in accordance with a control signal of the microcomputer.

【Claim 2】

The drum type washing machine according to claim 1, wherein the microcomputer controls a second eccentricity measurement operation to be performed after a first eccentricity measurement operation and a first preliminary spin drying operation but before a second preliminary spin drying operation, controls the first eccentricity measurement operation to be performed again if an eccentricity measured at the second measurement operation is larger than or equal to the reference value stored in the memory, and controls the second preliminary spin drying operation to be immediately performed if an eccentricity measured at the re-performed first eccentricity measurement operation is smaller than or equal to the reference value.

【Claim 3】

The drum type washing machine according to claim 2, wherein the microcomputer controls a third eccentricity measurement operation to be performed after the second preliminary spin drying operation but before a main spin drying operation, controls the first eccentricity measurement operation to be performed again if an eccentricity measured at the third measurement operation is larger than or equal to the reference value stored in the memory, and controls the main spin drying operation to be immediately performed if an eccentricity measured at the re-performed first eccentricity measurement operation is smaller than or equal to the reference value.

【Claim 4】

The drum type washing machine according to claim 1, wherein the preliminary spin drying operation at least includes a first preliminary spin drying operation and a second preliminary spin drying operation.

【Claim 5】

A controlling method of a drum type washing machine, comprising:

performing washing and rinsing operations in accordance with a start command inputted by a user and a procedure selected by the user;

performing an eccentricity measurement operation and a preliminary spin drying operation;

re-performing the eccentricity measurement operation, and controlling the preliminary spin drying operation not to be repeated in accordance with a result of the re-performed eccentricity measurement operation; and

performing a main spin drying operation.

【Claim 6】

The controlling method according to claim 5, wherein the eccentricity measurement operation and the preliminary spin drying operation are respectively

a first eccentricity measurement operation and a first preliminary spin drying operation, and the re-performing of the first eccentricity measurement operation and the controlling of the first preliminary spin drying operation include:

performing a second eccentricity measurement operation to determine whether the measured eccentricity is larger than or equal to a reference value, and if so, re-performing the first eccentricity measurement operation; and

if an eccentricity measured at the re-performed first eccentricity measurement operation is smaller than or equal to the reference value, performing a second spin drying operation directly without re-performing the first spin drying operation.

【Claim 7】

The controlling method according to claim 5, wherein the eccentricity measurement operation and the preliminary spin drying operation are respectively a first eccentricity measurement operation and a first preliminary spin drying operation, and the re-performing of the first eccentricity measurement operation and the controlling of the first preliminary spin drying operation include:

performing a third eccentricity measurement operation after a second preliminary spin drying operation to determine whether the measured eccentricity is larger than or equal to the reference value, and, if so, re-performing the first eccentricity measurement operation second time; and

if an eccentricity measured at the secondly re-performed first eccentricity measurement operation is smaller than or equal to the reference value, proceeding to the performing of the main spin drying operation without re-performing the first spin drying operation and the second spin drying operation.

【Claim 8】

The controlling method according to claim 5, wherein the re-performing of

the eccentricity measurement operation is repeated at least two times.

【Claim 9】

A controlling method of a drum type washing machine, comprising:

performing washing and rinsing operations according to an inputted condition;

proceeding to a spin drying process right after the rinsing operation, and simultaneously performing a first eccentricity measurement operation on a drum of the drum type washing machine;

comparing an eccentricity measured at the first eccentricity measurement operation with a reference value;

performing a first preliminary spin drying operation according to the compared result;

performing an n-th eccentricity measurement operation;

determining whether an eccentricity measured at the n-th eccentricity measurement operation is larger than the reference value, and, if so, repeating the first eccentricity measurement operation until the eccentricity becomes smaller than the reference value;

performing an n-th preliminary spin drying operation without repeating the first to an (n-1)-th preliminary spin drying operation;

performing an (n+ 1)-th eccentricity measurement operation;

starting a main spin drying operation according to a comparison result between an eccentricity measured at the (n+ 1)-th eccentricity measurement operation and the reference value; and

terminating the whole spin drying process after the main spin drying operation.

【Claim 10】

The controlling method according to claim 9, wherein the "n" is at least two.

【Claim 11】

The controlling method according to claim 9, wherein the "n" is automatically set by a microcomputer depending on the amount of clothes to be cleaned or the weight of the clothes.

【Claim 12】

The controlling method according to claim 9, wherein the starting of the main spin drying operation includes:

determining whether the eccentricity measured at the (n+ 1)-th eccentricity measurement operation is larger than the reference value, and, if so, repeating the first eccentricity measurement operation until the eccentricity becomes smaller than the reference value; and

starting the main spin drying operation without repeating the first preliminary spin drying operation to the n-th preliminary spin drying operation.

【Claim 13】

The controlling method according to claim 9, wherein the starting of the main spin drying operation is carried out when the eccentricity measured at the (n+ 1)-th eccentricity measurement operation is smaller than the reference value.

【Claim 14】

The controlling method according to claim 9, wherein the first eccentricity measurement operation includes balancing operation in which the drum is accelerated from a stationary state to a speed where the eccentricity of the drum is to be measured to uniformly distribute clothes throughout the inside of the drum.

【Claim 15】

The controlling method according to claim 9, wherein after the performing

of the n-th preliminary spin drying operation, the drum is decelerated to a speed equal to a speed where the first eccentricity measurement operation is carried out.

【Claim 16】

The controlling method according to claim 9, further comprising:

if the eccentricity measured at the n-th eccentricity measurement operation is not larger than the reference value, performing an n-th preliminary spin drying operation.

【Claim 17】

The controlling method according to claim 14, wherein the balancing operation is carried out until the eccentricity measured at the first eccentricity measurement operation becomes smaller than the reference value.

【Claim 18】

The controlling method according to claim 9, wherein the drum is rotated at a higher speed in the n-th preliminary spin drying operation than in the (n-1) preliminary spin drying operation.

【Claim 19】

The controlling method according to claim 9, wherein the same reference value is used for the eccentricity values measured at the first and the n-th eccentricity measurement operations.

【Claim 20】

The controlling method according to claim 9, wherein different reference values are used for the eccentricity values measured at the first and the n-th eccentricity measurement operations.